REMARKS

This Amendment is submitted in response to the final Office Action mailed on December 23, 2010. A Request for Continued Examination ("RCE") ($810.00) is submitted herewith. The Director is authorized to charge $810.00 for the RCE and any additional fees which may be required, or to credit any overpayment to Deposit Account No. 02-1818. If such a withdrawal is made, please indicate the Attorney Docket No. 3712174-00453 on the account statement.

Claims 1-4, 6-12 and 14-21 are pending in this application. Claims 5 and 13 were previously canceled without prejudice or disclaimer, and Claims 1 and 9 were previously withdrawn from consideration. In the Office Action, Claims 2-4, 6-8, 10-12 and 14-21 are rejected under 35 U.S.C. §103. In response, Claims 2 and 10 have been amended, and Claims 6 and 14 have been canceled. The amendments do not add new matter. In view of the amendments and/or for at least the reasons set forth below, Applicants respectfully submit that the rejections should be withdrawn.

In the Office Action, Claims 2-4, 6-8, 10-12 and 14-21 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2002/0117469 A1 to Jito et al ("*Jito*") in view of U.S. Patent No. 5,436,091 to Shackle et al. ("*Shackle*"). In response, Claims 2 and 10 have been amended, and Claims 6 and 14 have been canceled. Applicants respectfully submit that the cancellation of Claims 6 and 14 renders the obviousness rejection moot with respect to such claims. Furhtermore, in view of the amendments and/or for at least the reasons set forth below, Applicants respectfully submit that, even if combinable, *Jito* and *Shackle* fail to disclose or render obvious each and every element of independent Claims 2 and 10 and Claims 3-4, 7-8, 11-12 and 15-21 that depend therefrom.

Currently amended independent Claims 2 and 10 recite, in part, an anode including an anode current collector having a projection formed on a substrate; and an anode active material layer being formed on and covering the anode current collector and projection through at least one method selected from the group consisting of a vapor deposition method, a liquid-phase deposition method and a sintering method, and including at least one material selected from the group consisting of silicon (Si) and silicon compounds, wherein an average diameter of the projection ranges from about 3 μm to about 10 μm, and wherein the projection includes an element capable of being alloyed with the anode active material layer. The amendments do not add new matter. The amendments are supported in the Specification at, for example, page 2, paragraph 22; page 5, paragraph 55.

By forming the claimed projection on the anode current collector, adhesion between the active material and the current collector may be improved, thereby preventing the anode active material layer from falling off or cracking during charge and discharge. See, Specification, page 1, paragraphs 5 and 11-12; pages 1-2, paragraph 13; page 2, paragraph 20; page 4, paragraph 38. In contrast, the cited references are deficient with respect to the present claims.

For example, even if combinable, *Jito* and *Shackle* fail to disclose or suggest an anode current collector having a projection formed on a substrate, wherein the projection includes an element capable of being alloyed with the anode active material layer as required, in part, by independent Claims 2 and 10. The Patent Office asserts that the alleged "projection" of *Jito* includes an element capable of being alloyed with the anode active material layer because the alleged projection is made of copper. See, Office Action, page 3, lines 18-20. The Patent Office further asserts that the etching on *Jito*'s surface meets the claimed "projection" limitation. See, Office Action, page 6, lines 15-16. However, *Jito* teaches that a surface treatment layer or oxide layer is formed on its anode current collector before the etching occurs. See, *Jito*, page 1, paragraphs 10-14; page 2, paragraphs 24-25. In fact, *Jito* is entirely directed to etching its current collector to remove part or all of the surface treatment layer or oxide layer because the surface treatment or oxide layer suppresses diffusion of the current collector material into the anode active material. See, *Jito*, page 1, paragraphs 9-10 and 14; page 2, paragraphs 24-25; Table 1. Nowhere does *Jito* teach or suggest etching the anode current collector itself, rather than the surface treatment or oxide layer, to remove the current collector material. As such, one of ordinary skill in the art would understand that if any "projections" are formed by etching, the projections would be formed of the same material as the surface treatment layer or oxide layer.

For example, if the surface treatment or oxide layer is completely removed by etching, no projections would be formed. Alternatively, if part of the surface treatment or oxide layer is removed such that the etching resulted in alleged "projections" formed on the surface of the current collector, the projections would necessarily be formed of the remaining surface treatment or oxide layer. *Jito* teaches that the surface treatment layer includes materials for chromate treatment, silane coupling treatment or benzotriazol treatment, and the oxide layer is formed of an oxide film. See, *Jito*, page 1, paragraphs 12-14; page 2, paragraphs 24-25. Nowhere does *Jito* teach that its surface treatment or oxide layer includes an element capable of being alloyed with the anode active material layer.

The Patent Office relies on *Shackle* merely for the disclosure of a microroughened surface having irregularities protruding from the surface by a distance of 0.1-10 μm. See, Office Action, page 3, lines 6-8. Nowhere does *Shackle* disclose or even suggest a projection formed on an anode current collector and including an element capable of being alloyed with the anode active material layer. In fact, *Shackle* merely teaches an alkali metal anode layer 18 coated onto an electrolyte 16 and fails to even contemplate an anode current collector or forming a projection on an anode current collector. Therefore, even if combinable, *Jito* and *Shackle* fail to disclose or suggest an anode current collector having a projection formed on a substrate, wherein the projection includes an element capable of being alloyed with the anode active material layer in accordance with independent Claims 2 and 10.

For similar reasons, Applicants respectfully submit that, even if combinable, *Jito* and *Shackle* fail to disclose an anode wherein the anode active material layer is alloyed with the projection in at least a portion of an interface with the projection as required, in part, by Claims 8 and 16.

Accordingly, Applicants respectfully request that the rejection of Claims 2-4, 6-8, 10-12 and 14-21 under 35 U.S.C. §103(a) to *Jito* and *Shackle* be withdrawn.

The Patent Office further asserts that the method of forming the anode active material layer onto the current collector was not given patentable weight "because the courts have held that the method of forming the product is not germane to the issue of patentability of the product itself." See, Office Action, page 2, lines 10-15. However, the Federal Circuit recently confirmed that "process terms that define the product in a product-by-process claim serve as enforceable limitations." *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009). "A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which it is made, is proper." See, M.P.E.P. §2173.05(p) (2010). The issue is whether the claimed process results in a different product.

The Specification demonstrates that the method of forming the anode active material layer onto the current collector can result in a different product having different cycle characteristics. For example, Table 1 shows that a battery including a 3 μm projection formed on a copper anode current collector and in which the anode active material layer is formed by electron beam evaporation has a capacity retention ratio of 92%. See, Specification, page 5, paragraph 57; Table 1. Similarly, a battery in which everything is the same except that the anode active material layer is formed by sintering has a high capacity retention ratio of 88%. See,

Specification, Table 1. However, when the anode active material layer is formed by coating, the battery has a much lower capacity retention ratio of 20%. See, Specification, Table 1. As such, Applicants respectfully submit that the limitation of the method of forming the anode active material layer on the anode current collector should be given patentable weight.

For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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